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DATE: August 21, 2002

NO. OF PAGES (INCLUDING THIS PAGE): 25

FOR: Examiner James Mitchell

COMPANY: United States Patent and Trademark Office

FAX NO.: 703-305-3432

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FROM: G. Gregory Schivley (Reference No. 9319S-000062)

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COMMENTS:

Dear Examiner Mitchell:

THIS FACSIMILE OF THE DRAFT AMENDMENT IS FOR "DISCUSSION PURPOSES ONLY".

It regards the telephonic interview that will be conducted on August 29, 2002 at 3:00 p.m.

Thank you.

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August 21, 2002

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Via Facsimile
and Air Mail

Re: New U.S. Patent Application
Title: SEMICONDUCTOR DEVICE CONNECTING STRUCTURE, LIQUID
CRYSTAL DISPLAY UNIT BASED ON THE SAME CONNECTING
STRUCTURE, AND ELECTRONIC APPARATUS USING THE SAME
DISPLAY UNIT
Serial No.: 09/068,270 - Filing Date: May 4, 1998
Your Reference: FP02850US00
Our Docket No. 9319S-000062
Comments from Seiko due: September 25, 2002
PTO Deadline: October 2, 2002

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AUG 21 2002

COMMUNICATIONS CENTER

Dear Mr. Murakami:

Enclosed is a proposed Amendment in response to the outstanding Office Action issued for the above-identified patent application. In the Office Action, the Examiner rejected claims 1, 8, 18, and 24 under 35 U.S.C. § 102(b) as being anticipated by Yamazaki (JP 02-133936). The Examiner alleges that Yamazaki discloses spacers that occupy a space, and therefore anticipates the claims. In order to overcome this rejection, we amended the claims to call for the space to be a vacant space. This amendment is supported in the drawings as originally filed. Yamazaki does not disclose a vacant space, and therefore, Yamazaki does not anticipate the claims.

The Examiner also rejected claim 9 under 35 U.S.C. § 102(b) as being anticipated by Takeshi (EP 051071). The Examiner alleges that Takeshi discloses the claimed semiconductor device connecting method of interposing a bonding layer between the semiconductor and the substrate, joining the substrate and semiconductor device by pressing a heated pressurizing head against the semiconductor, and forming spaces within the bonding layer. In order to overcome this rejection, we amended claim 9 to call for forming the vacant spaces by decreasing the viscosity of the bonding material so that the bonding layer flows outward from the semiconductor device. We also amended claim 9 to call for controlling the formation of the vacant spaces such that a percentage of the vacant spaces in the bonding layer is 5% to 70%. Lastly, we amended claim 9 to further define the pressures and temperatures associated with the respective pressurizing and heating steps.

PATENTS, TRADEMARKS, COPYRIGHTS AND ALL OTHER INTELLECTUAL PROPERTY MATTERS

Takeshi only discloses that bubbles made of chemical gas or air may form when the adhesive is heated. As such, Takeshi does not teach either forming bubbles from a reduction in the viscosity of the adhesive or controlling the formation of the vacant spaces such that a percentage of the vacant spaces in the bonding layer is 5% to 70%. Therefore, Takeshi does not anticipate the claimed method.

The Examiner also rejected claims 2-7, 10 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki in view of Muramatsu (USPN 5,893,623). Furthermore, claims 11-17, 19, 20, 22, and 23 are rejected in view of the Applicant's admitted prior art in view of Yamazaki. These claims were also amended to call for vacant spaces. Yamazaki does not contain any suggestion or motivation to employ vacant spaces, and therefore, these claims are not obvious.

Please be advised that although claim 1 was not rejected as being anticipated by Takeshi, we felt that it was prudent to amend claim 1 to call for a percentage of vacant spaces in the bonding layer to be in the range of 5% to 70%. This is because the Examiner may construe the bubbles of Takeshi to be vacant spaces and reject the claims as being anticipated by Takeshi.

We also felt it was prudent to provide arguments that the claims were unobvious in view of Takeshi in order to possibly prevent a future rejection under 35 U.S.C. § 103(a). More specifically, we provided arguments that Takeshi teaches away from the use of bubbles (vacant spaces) in the bonding layer. By teaching away from the use of bubbles in the bonding layer, the claimed invention would not have been obvious in view of Takeshi.

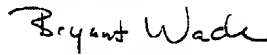
Furthermore, we noticed in the drawings of Takeshi, that the bubbles are smaller in size in comparison to the vacant spaces of the present invention. More particularly, we noticed in Figure 1 of the present invention that the vacant spaces seem to span between the semiconductor device and the substrate. We could not, however, locate any disclosure in the specification that discussed this feature of the drawings. Nevertheless, we feel that this characteristic of the vacant spaces may be useful to overcome a possible future rejection, if needed. Please advise whether the size of the vacant spaces is an important feature and whether a new claim should be added that covers this feature.

Still furthermore, with respect to the newly claimed pressures in claim 9, we included units of pressure (kgf) that were disclosed in the specification. We were not, however, familiar with this type of pressure units. Please advise whether these units are correct, or whether the units should be disclosed in a more conventional manner (i.e., pascals (Pa), bars, or atmospheres (atm)).

Lastly, please be advised that we scheduled a telephonic interview with the Examiner for August 29, 2002. In the telephonic interview, we plan to discuss our proposed Amendment and further attempt to provide arguments in support of the patentability of the present invention. As such, if you would like to provide us with any further comments or insight that would assist in the telephonic interview with the Examiner, please do so before August 29, 2002. Please keep in mind that the normal due date for responding to the outstanding Office Action is **October 2, 2002**.

Thank you for letting us assist you in this matter. If you have any questions or concerns, please do not hesitate to contact me.

Very truly yours,



G. Gregory Schivley

GGG/BEW/JAH
Enclosures

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 09/068,270

Filing Date: May 4, 1998

Applicant: UCHIYAMA

DRAFT

Group Art Unit: 2827

Examiner: MITCHELL, James

Title: SEMICONDUCTOR DEVICE CONNECTING
STRUCTURE, LIQUID CRYSTAL DISPLAY UNIT
BASED ON THE SAME CONNECTING STRUCTURE
AND ELECTRONIC APPARATUS USING THE SAME
DISPLAY UNIT

Attorney Docket: 9319S-000062

Commissioner of Patents and Trademarks
Washington, D.C. 20231

AMENDMENT

Sir:

In response to the Office Action mailed July 2, 2002, please amend the application as follows and consider the remarks set forth below.

IN THE CLAIMS

Please amend the claims in accordance with the following rewritten claims in clean form. Applicant includes herewith an Attachment for Claim Amendments showing a marked up version of each amended claim.